REDACTED VERSION – PUBLICLY FILED

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF DELAWARE

CRYOVAC, INC.,	)	
	)	
Plaintiff/Counter-Defendant,	)	C.A. No.: 04-1278 (KAJ)
	)	
vs.	)	CONFIDENTIAL AND
	)	SUBJECT TO PROTECTIVE
PECHINEY PLASTIC PACKAGING, INC.,	)	ORDER
	)	
Defendant/Counter-Plaintiff.	)	REDACTED VERSION – PUBLICLY FILED

AFFIDAVIT OF GARTH L. WILKES IN SUPPORT OF CRYOVAC'S OPPOSITION TO PECHINEY'S MOTION FOR SUMMARY JUDGMENT ON PATENT ISSUES

Garth L. Wilkes, being first duly sworn upon oath, states as follows:

1. I understand that Pechiney has filed a Motion for Summary Judgment on Patent Issues, wherein Pechiney raised three arguments concerning the validity of the U.S. Patent No. 4,755,419 ("Shah '419 patent," Ex. A): anticipation, obviousness, and enablement. For the reasons set forth below and those in my expert my reports dated June 17, 2005 (Ex. B) and July 15, 2005 (Ex. C) and my deposition testimony (Ex. D), which I incorporate herein, it is my opinion that an oriented coextruded film having at least seven layers arranged symmetrically as provided in claim 11 of the Shah '419 patent was not anticipated. Nor would this oriented coextruded film have been obvious from the state of the prior art before its invention by Gautam P. Shah. In that regard, I have now had an opportunity to read Mr. Shah's August 11, 2005 deposition testimony (Exs. E, F) and understand that he has testified that he had made this invention by August 30, 1985.

(Ex. F, 17:17-18:10.) It is also my opinion that the Shah '419 patent enables a person of ordinary skill in the art to make and use the invention of claim 11 without undue experimentation. My opinions are based on my personal knowledge from my experience in the field and the information I have reviewed in connection with this case, including in particular the documents cited herein.

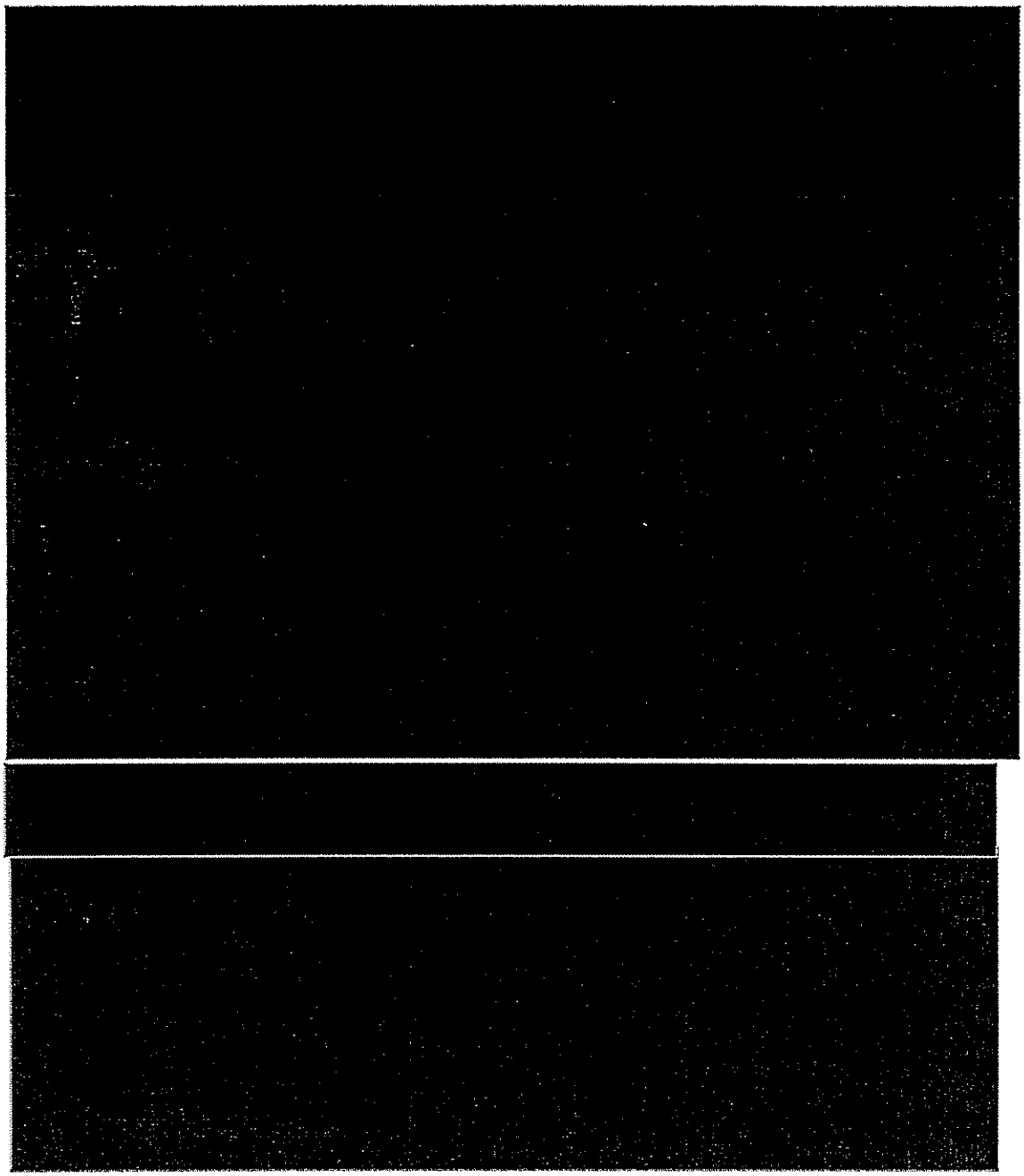
I. Pechiney's Anticipation Arguments

2. Pechiney's Memorandum concerning summary judgment for patent issues contends that claim 11 of the Shah '419 patent is anticipated by the Gilbert Film (this film is also referred to as "the Allied film"). The Memorandum also contends that claim 11 is anticipated by "Film C" (also referred to as the "Hatley Film") of the Allied News Release (this reference is also cited as the "Hatley Article"). Pechiney's arguments are based on the August 16, 2005, Declaration of Seymour G. Gilbert ("Gilbert Declaration," Ex. G), the August 15, 2005, Declaration of Stratos Dimas ("Dimas Declaration," Ex. H), and the October 18, 2005, Declaration of Dr. Mount (Ex. I), which is in turn based on the Gilbert Declaration. All of these declarations are dated after my second and last report and after my deposition. Hence, I have not had the opportunity to respond to these declarations previously.

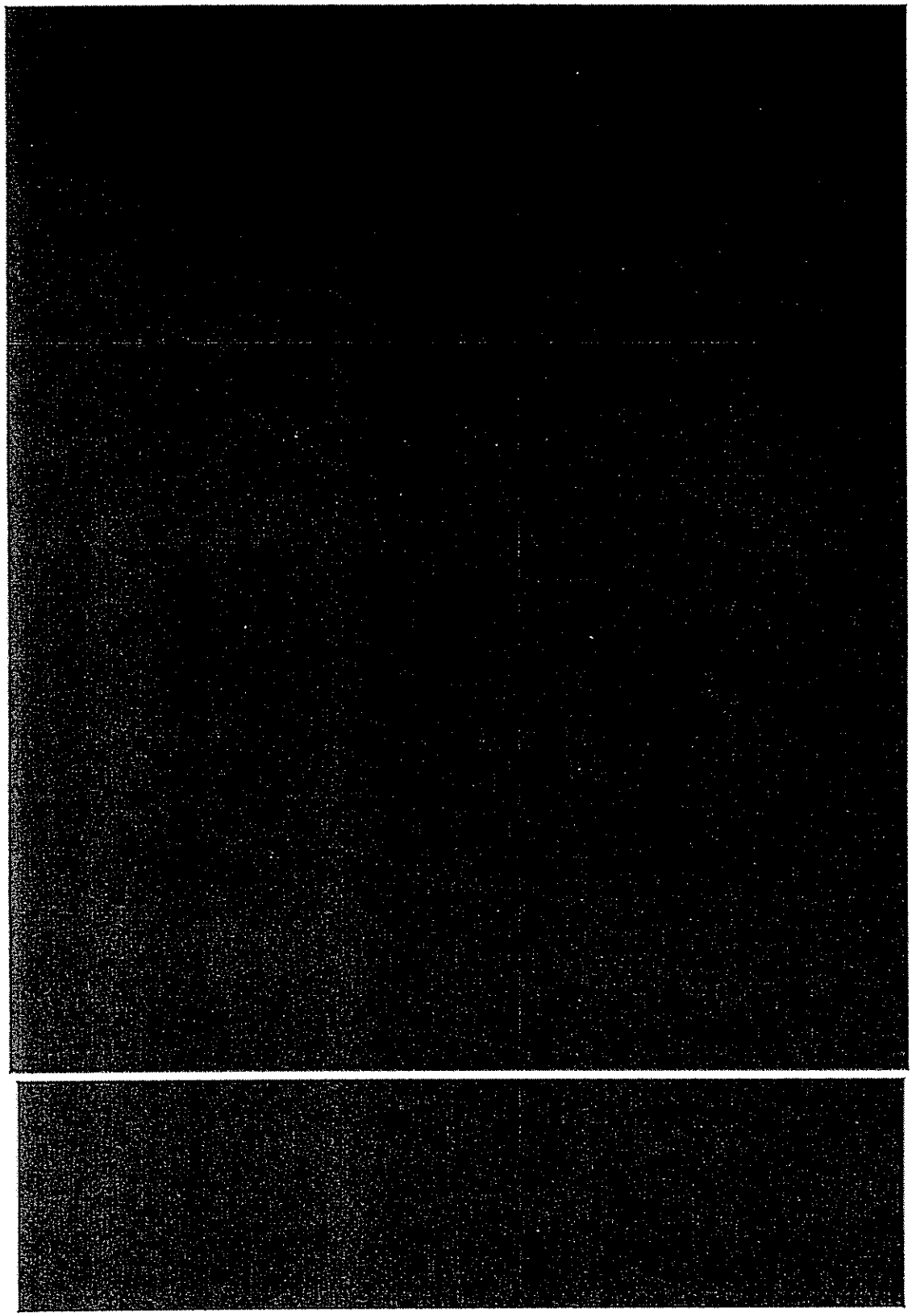
3. I have, however, offered in my expert reports the opinion that claim 11 of the Shah '419 patent is not anticipated by any of the ten or so references, including the Allied News Release, alleged in Dr. Mount's several reports to be anticipatory. (Ex. B, §III.C; Ex. C, §I.) Although Pechiney is only currently arguing that there are two pieces of anticipatory prior art (*i.e.*, the Gilbert Film and the Allied News Release Film C), I maintain my opinion that claim 11 of the Shah '419 patent is not anticipated even in view of the three declarations upon which they newly rely. The bases of my opinion that

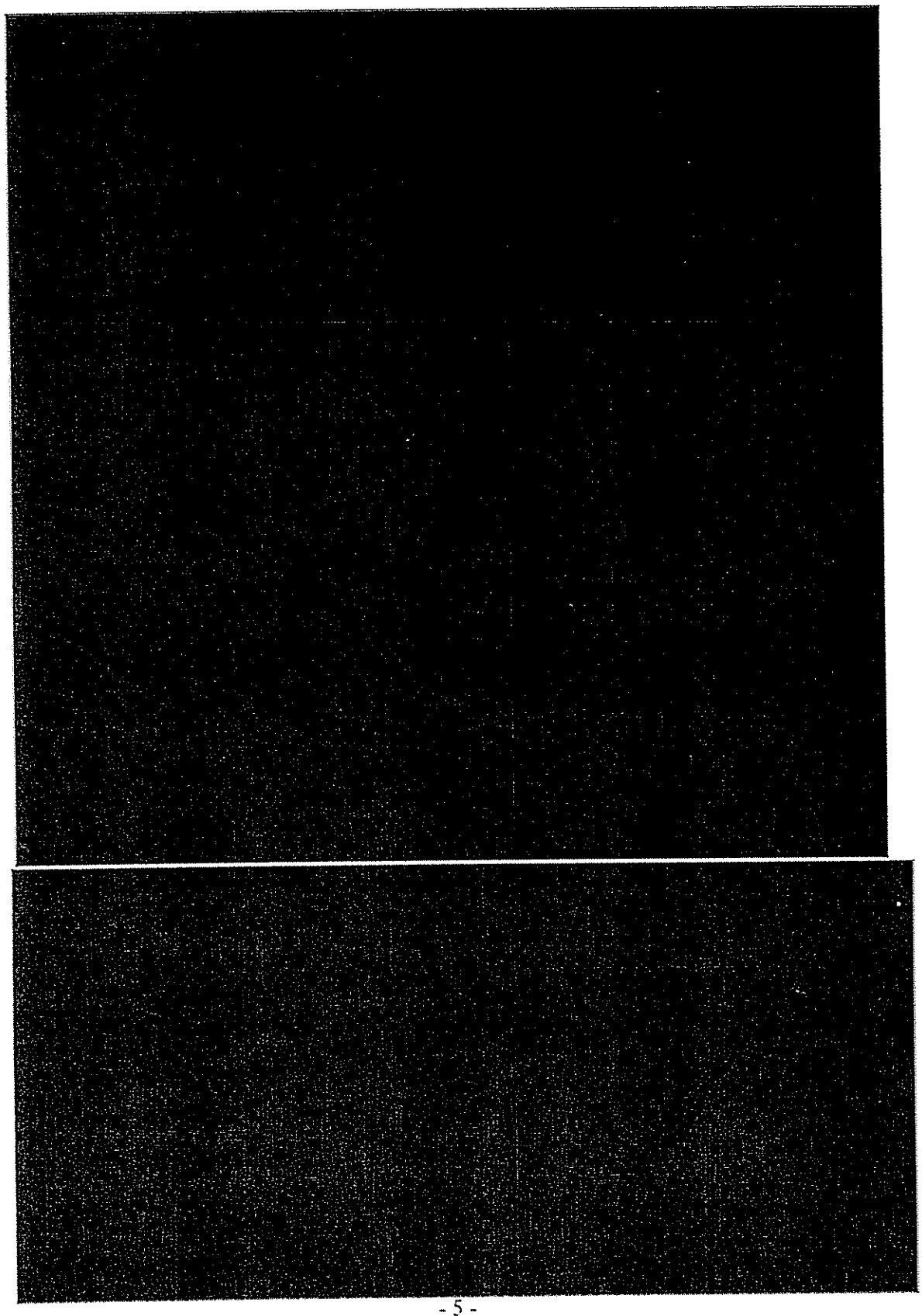
neither the Gilbert Film nor the Allied News Release film C anticipates claim 11 of the Shah patent are explained below.

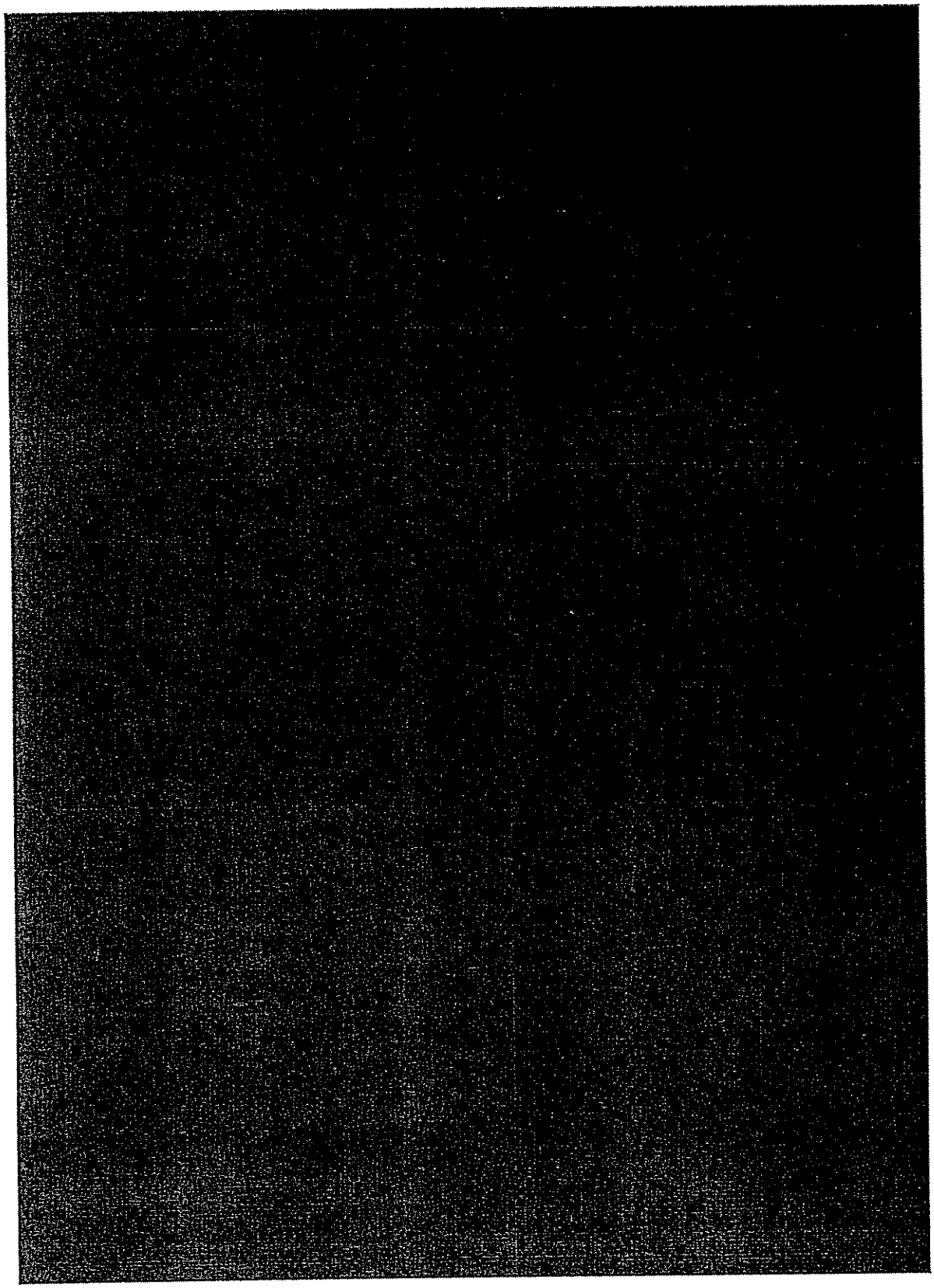
A. The Gilbert Film

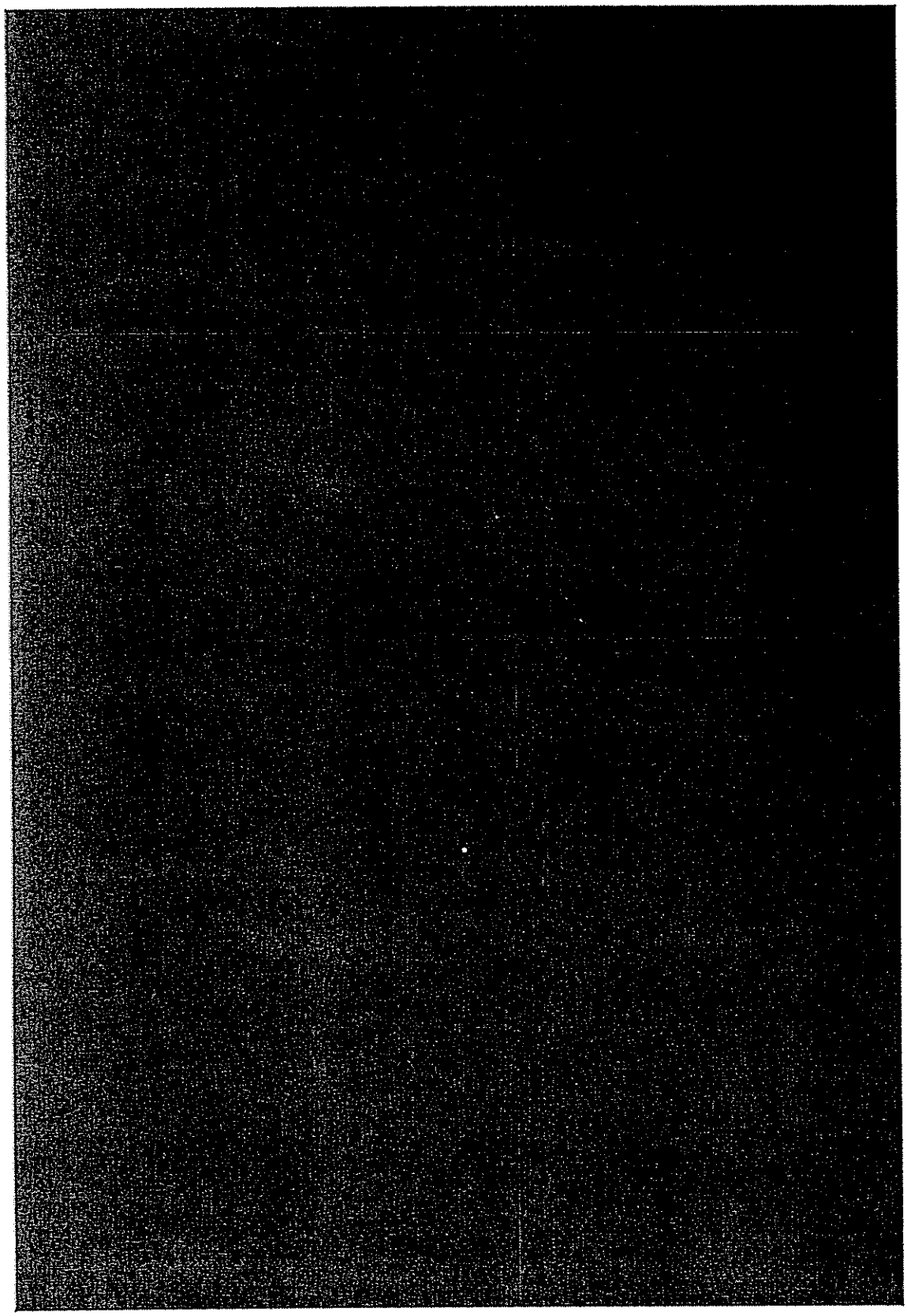


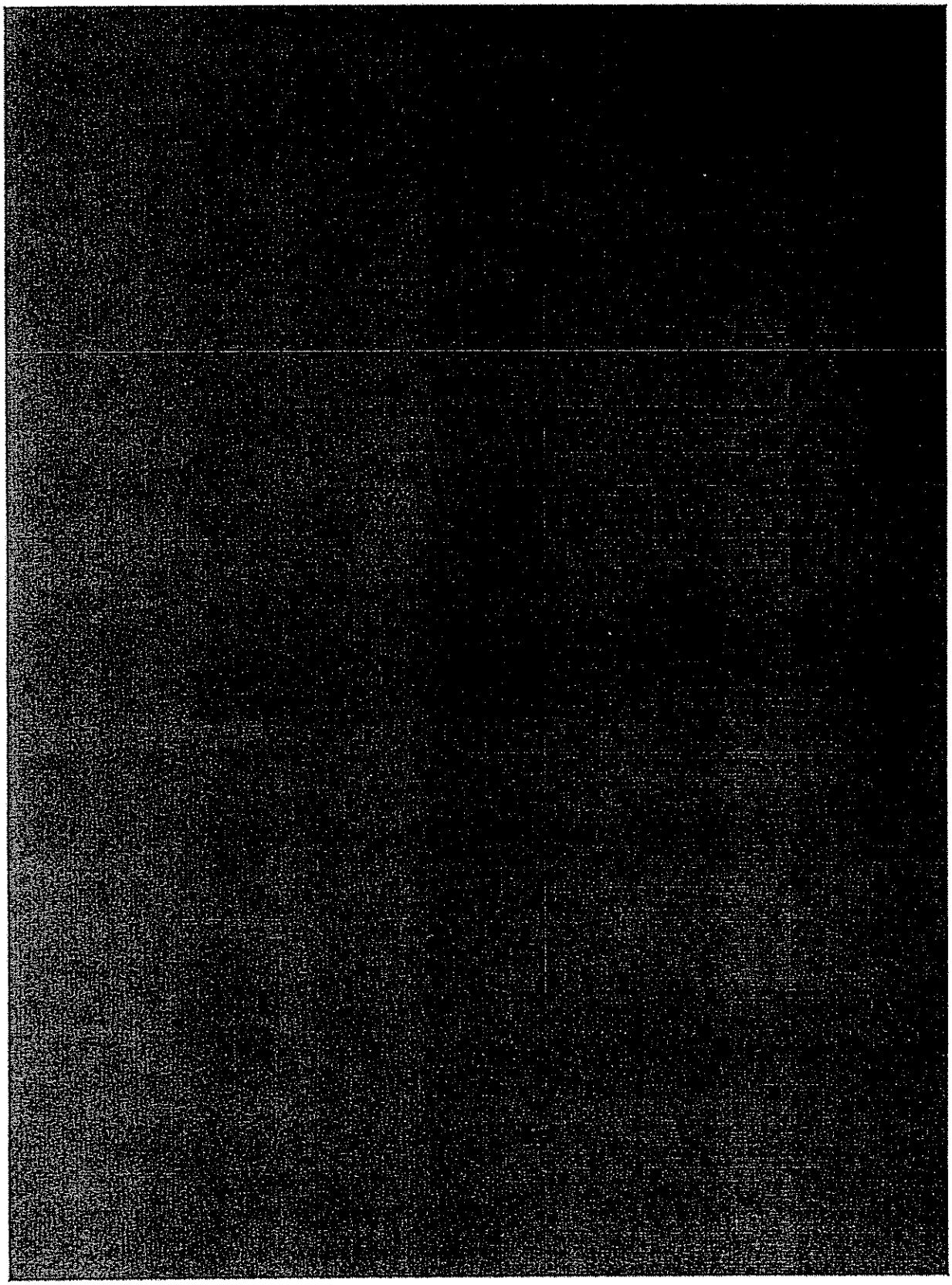
[1] Nylon is representative of a class of polyamide materials. In the Shah '419 patent, this material is used for the two intermediate layers surrounding the EVOH core.

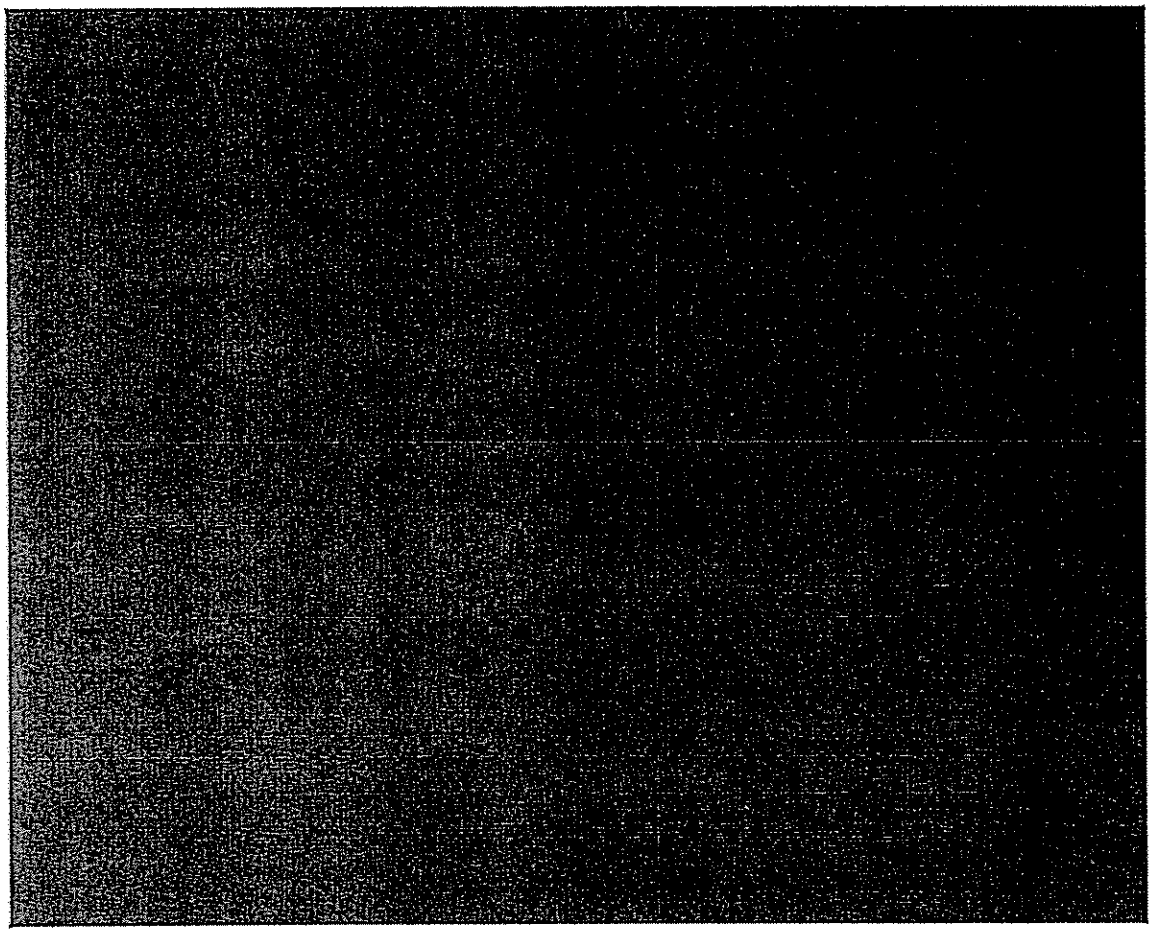






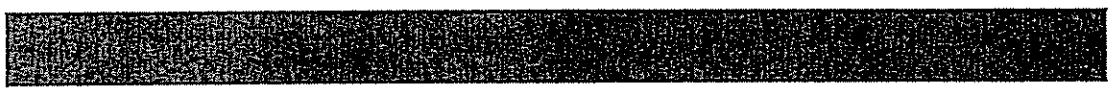


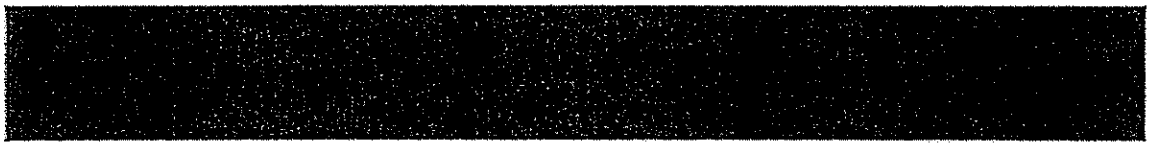




B. Allied News Release Film C

19. As I have previously explained in my June 17, 2005 Expert Report (Ex. B, §III.C.7), Allied News Release Film C (the Hatley nylon containing nine-layer film) is not disclosed to be oriented. In fact, *none* of the nylon containing films in the Allied News Release are disclosed as being oriented, though, in contrast, one non-nylon containing film (Film F) is expressly disclosed as being oriented. In view of this express distinction of another film as being oriented, the conclusion the reader certainly draws from the Allied News Release is that Film C, relied upon by Pechiney, is not oriented. Also, the date of publication for the Allied News Release is not indicated therein, and is





20. Pechiney's contention that Film C is oriented is based on the opinions of Dr. Mount who seems to have revised his position on the nine-layer Allied News Release Film C. In his first report, rather than contending that the film was disclosed as being oriented, he only offered the opinion that "[t]here is nothing disclosed that would indicate that [the nine-layer Allied News Release Film "C" (a.k.a. the Hatley nine-layer film)] was unoriented." (Ex. I, Tab A, at 31.) However, that position was not accurate. Indeed, as noted above and as later recognized by Dr. Mount, the Allied News Release expressly identify another film (Film F) as being oriented. (Ex. M, Mount Depo. Tr. at 183:22-184:8.) Dr. Mount also indicated previously that the text contained a typographical error with respect to the disclosed structure and that it is not the nine-layer film as reported (Ex. I, Tab D, pg. 4), but he seems to have revised his position on this point as well.

21. I disagree with Dr. Mount that it would have been "extremely difficult" to make the Allied News Release Film C "unoriented" within the meaning of the Shah '419 patent. To the contrary, it would have been easier to make the Allied News Release Film C unoriented, because the definition of oriented in the Shah '419 patent requires the additional processing steps of the film being "heated and stretched to realign the molecular configuration, this stretching accomplished by a racking or blown bubble process." (Ex. A, col. 3, lns. 45-49.)

22. Furthermore, there is no enabling disclosure in the Allied News Release as to how to orient the films described therein.

II. Pechiney's Obviousness Position

23. Pechiney's Memorandum concerning summary judgment for patent issues contends that claim 11 of the Shah '419 patent is rendered obvious by the Gilbert Film and Allied News Release Film C. As with their anticipation contentions, Pechiney's arguments are based on the recent Declarations of Dr. Gilbert, Mr. Dimas, and Dr. Mount, which I have not previously had the opportunity to respond to since they were first presented after my second and last report and after my deposition.

24. I have, however, offered in my two expert reports the opinion that claim 11 of the Shah '419 patent would not have been obvious in view of the fifteen or so references previously relied upon by Pechiney and Dr. Mount. (Ex. B, §III.C; Ex. C, §I.) Even now that they have limited their arguments to being based on the new Gilbert materials that I had not had a previous opportunity to review, I maintain my opinion that claim 11 of the Shah '419 patent would not have been obvious.

25. A key problem with Pechiney's past and current obviousness contentions is that they fail to consider the scope and content of the prior art in its entirety, instead relying on selected portions of selected references and motivation taken out of context without regard for any reasonable expectation of success. Before addressing Pechiney's current obviousness contentions, several relevant aspects of the prior art are addressed below.

A. Scope and Content of the Prior Art

1. Packaging designs are made with particular end uses in mind

26. Packaging film designs are not made in the abstract. Rather, they are made with particular end uses, packing equipment and packaging product protection

targets in mind. Thus, developments and proposed modifications of packaging film structure cannot be considered in the abstract. They must be considered from the perspective of being "Fit-For-Use." A person of ordinary skill in the art would not have been motivated to make a modification that would render a film no longer "Fit-For-Use".

27. It is also necessary to have actual experience with a product to understand its properties and failure mechanisms. Without actual testing, there would have been no reasonable expectation of success that changing the layers of a film, introducing new layers, or changing processing conditions could be successfully achieved or would result in a successful product. These issues cannot be, and would not have been, ignored when film developments or modifications are considered.

28. Indeed, the large number of packaging design considerations to be considered by one of ordinary skill in the art do not uniformly point to a single direction or solution to a given problem or goal. For example, including polyamide (*e.g.*, nylon) layers in a packaging film can improve puncture resistance but at the expense of increasing stiffness. If the film is too stiff, then it displays less conformability with the product to be packaged, which is generally undesirable. Furthermore, as Pechiney's ClearShield development documents explain, "stiffness equates to a packaging material that is difficult to handle in a product environment. High stiffness values contribute to a lack of tear strength and ultimate elongation - which may be problematic..." (Ex. R, PPPI 008281.)

29. Rather than taking factors in isolation, one skilled in the art would have needed to consider all the relevant factors, even though they may point in opposite directions, to successfully achieve the desired set of product properties. This reality

severely limits the scope of what modifications of a reference would have been obvious. Indeed, even as late as 1999, G.A. Campbell et al. in "Kinematics, Dynamics, and Physical Properties of Blown Film" (Reference N) explained that "[d]espite the advances made toward the better understanding of the process fluid dynamics and associated physical phenomenon, theoretical prediction has not replaced art in developing process/property cause and effect. Trial and error, and experience still dominate the methods of troubleshooting and scaleup on blown film equipment." (Ibid. at 130.) This reality is not reflected in Pechiney's obviousness arguments.

2. Teaching away from the Shah '419 patent

30. The art taught away from, among other things, attempting to orient EVOH-containing multilayer films. For instance, the known difficulties of orienting multilayer films are reflected in Pechiney's own patents. For example, Pechiney's U.S. Patent No. 4,501,797 to Super ("Super patent") (Reference O), which issued in February 1985, states at column 1, lines 40-58 that:

> [v]arious attempts have been made to advantageously utilize the benefits of molecular orientation of films to achieve certain of the desirable properties. A serious problem in these developments has been that each different polymer has its unique required set of heating and stretching conditions. Where certain combinations of layer compositions do not have overlapping conditions conductive to molecular orientation of the multiple layer film, additional provisions must be made for effecting the simultaneous orientation of the plurality of layers. There is no known art which makes the necessary provisions. Absent these provisions, in previous attempts to orient multiple layer films, adjacent layers have developed undesirable stresses at layer interfaces, and cohesive stresses within the layers themselves. These stresses too often have manifested themselves in poor or non-existent layer adhesion at the layer interfaces, and in cracking or hole development in one or more of the layers.

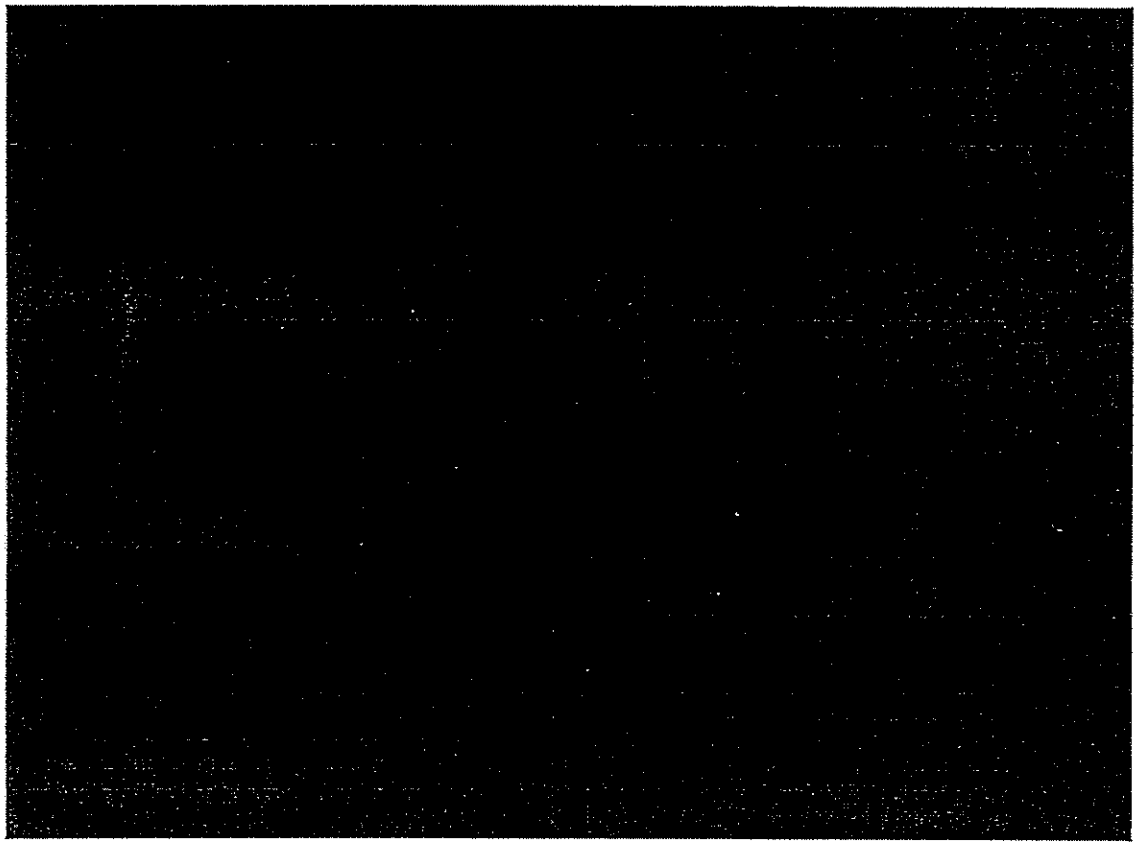
Rather than provide a universal answer to the problem of orienting multilayer films, the Super patent provides only a narrow solution that entails specific unbalanced multilayer films:

> The inventors herein have found that certain unbalanced multiple layer polymeric films can be molecularly oriented by proper choices of layer structuring and processing conditions to achieve a transparent, heat sealable, high barrier oriented film. Illustrative of films of this invention is an unbalanced film where the layers are, in order; a first molecularly oriented layer of polypropylene (PP), a second molecularly oriented adhesive layer of polypropylene which is acid anhydride modified (MPP), a third molecularly oriented layer of ethylene vinyl alcohol copolymer (EVOH), and a fourth sealant layer.

(Ex. O, col. 2, lines 36-47.) Thus, Pechiney's own contemporaneous Super patent teaches away from Shah's invention.

31. At the time the application for the Shah patent was filed, it was recognized that EVOH films and layers were particularly difficult to stretch orient. For example, Pechiney's (American National Can) U.S. Patent No. 4,610,914 to Newsome ("Newsome patent") (Reference P), which issued in September 1986, explains that "[f]ilms containing layers of EVOH by itself have heretofore been most difficult to produce by blown bubble extrusion and orientation because the EVOH is very sensitive to conditions of processing." (Ex. P, col. 4, lines 56-59.) While offering a narrow solution in terms of a specific EVOH blend, the Newsome patent further recognized the unpredictability and difficulty of EVOH film orientation, noting, for example, that "it is difficult to precisely define or predict the temperature ranges within which orientation will be achieved most effectively for any specific film structure." (Ex. P, col. 5, lines 26-29.) The Newsome patent further notes that the selection of materials for other layers is a "critical factor in

determining processability." (Ex. P, col. 5, lines 52-54.) As Newsome explains, "[the process-related penalty of improper choice of polymer materials or of improper processing conditions is, of course, inability to establish and maintain a stable orientation bubble." (Ex. P, col. 5, lines 12-15.)



34. Thus, consistent with Newsome and as evidenced by [redacted] experience, it was not the case that one skilled in the art would have been motivated to orient an EVOH or nylon containing multilayer film without regard to the specific properties and composition of that film. Further, one skilled in the art would not have had a reasonable expectation of orienting such a film to successfully yield a functional and useful film with the desired product properties.

35. Pechiney has also failed to address the extent to which the art taught away from the use of nylon together with EVOH. For example, U.S. Patent No. 4,608,286 states that there is a "significant reduction in flexing endurance" of nylon when used with an EVOH intermediate layer. (Ex. Q, col. 3, lines 38-52.)

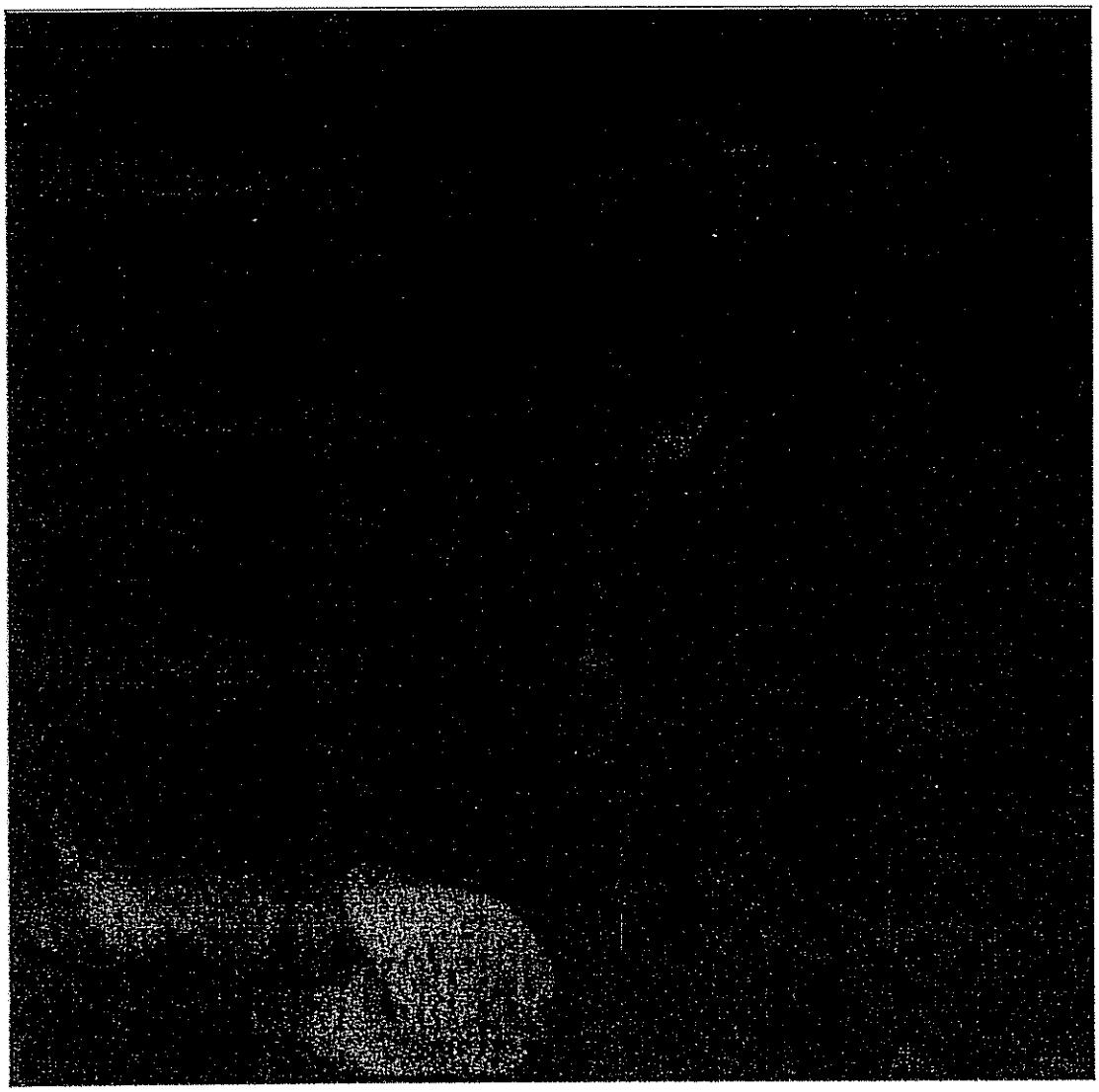
36. Further, even one of the references related to the work of Dr. Gilbert, on which Pechiney's current invalidity contentions are based, taught away from the combined uses of nylon and EVOH. The Journal of Commerce article (Ex. K) explained that there was no practical or cost effectiveness benefit to their combined use. (Ex. K ("The second research project sought to determine whether nylon and EVOH in a single specification have a synergistic effect on flavor and aroma which would be cost effective... Combinations of nylon and EVOH do not, Dr. Gilbert's tests showed, produce a significant synergistic effect in terms of barrier properties compared to a nylon-only coextrusion or an EVOH-only coextrusion.").) Instead of using both materials, nylon-only "film coextrusions offer the most cost-effective barrier for flavors, aromas and odors for food and other sensitive packaging..." (Ex. K.)

37. In view of the known difficulties with orienting multilayer films, one of ordinary skill in the art would not have been motivated to arbitrarily orient an unoriented film, and would have had no reasonable expectation of success that an unoriented film could be successfully oriented and achieve the desired product properties. In particular, one of ordinary skill in the art also would not have been motivated to orient a multilayer film containing EVOH, nylon, or especially both materials as orientation of these were known to be, at best, problematic. There also would have been no motivation for the

combined use of EVOH and nylon due to, among other things, the reduced flex endurance and absence of any cost effective benefits.

3. Objective indicia of nonobviousness

38. Pechiney's current and previous obviousness contentions also fail to consider the objective indicia of nonobviousness, as explained in my initial expert report. Among the pertinent factors demonstrating that the invention of claim 11 of the Shah patent would not have been obvious is the unexpected superiority of the claimed invention.



[redacted]

41. As explained in my expert reports (Ex. B, §III.D.3; Ex. C, §III), Cryovac's commercial LID1050 film product and Pechiney's commercial ClearShield™ product both fall within the scope of claim 11 of the Shah '419 patent. Both are relevant to the nonobviousness of claim 11 of the Shah '419 patent.

42. LID1050 is an oriented coextruded seven layer film. LID1050 is oriented by reheating the coextruded film to its orientation temperature and stretching it to realign the molecular configuration, this reheating and stretching is accomplished by a blown bubble process as described in Example 1 of the Shah '419 patent. The seven layers of LID1050 are an EVOH containing core layer, two intermediate polyamide (*i.e.*, nylon) layers, two adhesive layers that adhere respective intermediate layers to outer layers, and two outer polymeric layers. The seven layers in LID1050 are arranged symmetrically, *i.e.*, one nylon layer, one adhesive layer and one outer polymeric layer are arranged in the same order on each of the opposite sides of the core layer. (Ex. S.)

43. Likewise, ClearShield™ is also an oriented coextruded seven layer film, and is also oriented by reheating the coextruded film to its orientation temperature and stretching it to realign the molecular configuration, this reheating and stretching is accomplished by a blown bubble process as described in Example 1 of the Shah '419 patent. The seven layers of ClearShield™ are an EVOH containing core layer, two intermediate polyamide (*i.e.*, nylon) layers, two adhesive layers that adhere respective intermediate layers to outer layers, and two outer polymeric layers. The seven layers in ClearShield™ are arranged symmetrically, *i.e.*, one nylon layer, one adhesive layer and

one outer polymeric layer are arranged in the same order on each of the opposite sides of the core layer.

44. Both LID1050 and [redacted] have been commercially successful. This is another indication that the claimed subject matter would have been nonobvious because the commercial success of these commercial embodiments of the invention of claim 11 of the Shah patent is due to the merits of Shah's invention. (*See*,

[redacted]

45. Indeed, Shah's invention is a technically superior film and that in my opinion has contributed to the commercial success of LID1050 a[redacted]

[redacted]

B. Modifying the Gilbert Film Was Not Obvious

46. Pechiney argues that even if the Gilbert Film was unoriented, it would have been obvious to orient such a film. I disagree. One of ordinary skill in the art, at the time of the Shah '419 patent invention, would not have been motivated to orient the Gilbert Film.

[redacted]

[redacted]

48. Second, even if the subject matter of the Journal of Food Science Article was known sufficiently prior its 1987 publication date, Film C already has among the best vapor barrier properties. (Ex. J, *e.g.*, pg. 473, col. 1; Tables 2, 3.) Due to the risk of adversely affecting its properties, there would have been little or no motivation to attempt to modify this already successful structure. In addition, the Journal of Food Science Article, which does not address the specifics of orientation or its influence on various permeants, simply lacks any teaching, suggestion, or motivation for orienting the Film C. Furthermore, vapor barrier properties are a function of film thickness, with thinner films providing less barrier compared to thicker but otherwise equivalent films. Thus, making the film layers thinner by orienting them could reduce the barrier properties, at least for some of the many permeants addressed in the Journal of Food Science Article. In addition, orientation can undesirably decrease barrier properties of a film for other reasons as well. These considerations, neither of which was addressed by Pechiney, also teach away from orienting Film C.

49. Third, the stretch conditions successfully employed by Shah to orient the patented film reduced film thickness by approximately 10 times. (Ex. A, col. 7, lns. 27-34.) In the case of the 1.4 mil Journal of Food Science Article, film C (the seven-layer Gilbert Film), such stretching would yield a film only 0.14 mils, *i.e.*, 14/100,000 of an inch thick. In my opinion, a seven-layer film of such a microscopic thickness would be too thin to be successfully and reproducibly fabricated. For example, as noted in the Shah '419 patent, core layers of EVOH less than 0.05 mils thick are problematic due to

the formation of voids resulting from variations in the layer thickness. (Ex. A, col. 4, ln. 63 - col. 5, ln. 2.) However, for a seven-layer film that is 0.14 mils thick, the average layer thickness would be only 0.02 mils. Due to the known problems of extremely thin layers, there also would have been no reasonable expectation of successfully making such a thin film.

50. Fourth, as indicated in my expert reports (*e.g.*, Ex. B, ¶38-44) and discussed above, at the time the application for the Shah '419 patent was filed, it was recognized that EVOH and nylon containing films and layers were each difficult to stretch orient, and one of ordinary skill in the art would not have been motivated to orient just any unoriented film, and would have had no reasonable expectation of success that an unoriented film could be successfully oriented. Many references taught away from even attempting to orient certain types of multilayer films, especially EVOH and nylon containing multilayer films. (*Id.*) Thus, it was not the case, in the mid 1980s, that any and every multilayer film could be oriented or that one skilled in the art would have believed that any and every multilayer film could be oriented and achieve desired product properties. The statements by Benning (Pechiney Ex. 23, A281; Pechiney Ex. 104, A1563) relied upon by Pechiney, do not say anything different, as Benning is only referring to the orientation of single layer, single component films. Benning never refers to the orientation of seven-layer films containing, among other things, an EVOH core layer.

C. Modifying Allied News Release Film "C" Was Not Obvious

51. As explained above, one reading the Allied News Release would conclude that Film C reported therein was not oriented. Further, one skilled in the art would not have been motivated to orient this film.

52. As indicated in my expert reports (*e.g.*, Ex. B, ¶38-44) and discussed above, numerous considerations taught away from the invention of the Shah '419 patent and render the claimed subject matter objectively nonobvious. First, one would not have been motivated to further modify an already apparently successful film. Second, one would not have been motivated to arbitrarily orient an EVOH and nylon containing multilayer film in view of the known difficulties of orienting EVOH and nylon containing multilayer films. Third, one would not have been motivated to orient such a film and thereby reduce the thickness of a film already only 1.4 mils thick. Fourth, one would not have had a reasonable expectation of success that such a thin multilayer film could be successfully oriented to achieve a useful or functional film.

III. Pechiney's Enablement Contentions

53. Pechiney's Memorandum concerning summary judgment for patent issues contends that claim 11 of the Shah '419 patent is invalid as non-enabled based on the August 16, 2005, Deposition Testimony of Tommy Kay. This argument was not made in Dr. Mount's initial expert report (Ex. I, Tab A) or any of his subsequent reports. Hence, I have not had the opportunity to respond to this argument, which is based on deposition testimony occurring after my second and last report.

54. I have, however, previously offered the opinion that claim 11 of the Shah '419 patent is enabled, and maintain my opinion in this regard in view of Pechiney's new argument. (Ex. D, 16:14-19; 109:11-117:13.) For example, as I stated previously, the Shah '419 patent provides, among other things, teachings concerning how to make a very good decision as to what EVOH, nylon, tie, and polymer materials to use and important information concerning processing, including what temperature range to use. (*Id.*)

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55. Moreover, I do not believe that the testimony of Mr. Kay (Ex. T, 101:8-102:15; 109:9-112:14) supports Pechiney's argument that claim 11 of the Shah '419 patent is not enabled. Contrary to what Pechiney argues, the Shah '419 patent provides detailed and specific information concerning suitable polymer components that may be used together with, among other things, guidance as to suitable layer thicknesses and orientation conditions. (*E.g.*, Ex. A, Shah '419 patent, col. 5, ln. 6- col. 8 col. 68.) Based on this disclosure of the Shah '419 patent, in my opinion the patent enables a person of ordinary skill in the art to make and use the invention of claim 11 without undue experimentation.

Further Affiant Sayeth Not.

Garth L. Wilkes

SUBSCRIBED AND SWORN TO before me this 17th day of Nov., 2005.

Barbara P. Dawson O'Connell
Notary Public

Barbara P. Dawson O'Connell
Notary Public State of NY
Cayuga Co. ID# 4985310
Commission Expires 8-12-09

CERTIFICATE OF SERVICE

I, Michele Sherretta, hereby certify that on November 29, 2005, I caused to be electronically filed a true and correct copy of the foregoing document with the Clerk of the Court using CM/ECF, which will send notification that such document is available for viewing and downloading to the following counsel of record:

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